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MMC1/0702

EXAMINER

KERVEROS, J

ART UNIT

PAPER NUMBER

2858

5

DATE MAILED:

07/02/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/610,668

Applicant(s)

BRIDGES ET AL.

Examiner

James C Kerveros

Art Unit

2858

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

**METHOD AND APPARATUS
FOR SUB-MICRON IMAGING AND PROBING ON PROBE STATION**

Response to Amendment

This Office Action is in response to Amendment filed June 11, 2001 In reference to Claims 1-33.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 23 and 30 the limitation, of first positioning unit configured to be "optionally added" onto a probe station platform, fails to clearly define the metes and bounds of the claimed invention. The phrase "optionally added" implies a discretionary choice by the inventor to include or to exclude the first positioning unit from the probe station, thus rendering the claims indefinite.

Claims 2-22, 24-29 and 31-33 are rejected because they depend on independent claims 1, 23 and 30.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 6-9, 15-18, 23-27, 30 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindsay et al. (US 5983712), in view of Applicant's admitted prior art.

Lindsay discloses a probe apparatus of an atomic force microscope for profiling the properties of a surface and for probing the properties of individual molecules attached to that surface.

Regarding Claims 1, 2, 4, 23 and 30 the probe apparatus, comprises:

- (a) A first positioning unit actuator (1, FIG. 3A, prior art) held in a fixed position.
- (b) A probe arm cantilever assembly (2, FIG. 3A) attached to the first positioning unit 1.
- (c) A second positioning unit flexible cantilever (3, FIG. 3A) attached to the probe arm.
- (d) A cantilever tip (4, FIG. 3A) attached to the second positioning unit. Furthermore,

Lindsay discloses in FIG. 9 a cantilever probe 48 which is attached to a scanning

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element such as a piezoelectric scanning transducer 50 which holds the probe above the surface 52 of sample DUT 54.

(e) A motion sensitive detector (60, FIG. 9) for detecting the position of the cantilever probe. Laser beam (58, FIG. 9) is reflected from the back of cantilever probe 48 into a position so that deflections of the probe may be detected and recorded.

Lindsay in the prior art discloses a piezoelectric actuator 1, which is used to sweep the stiff end of a cantilever 2 by some amount (labeled X_{subD}) toward the sample S as show in FIG. 1A.

Regarding Claims 6–9, 15-18, 24-27 and 33, Lindsay discloses image of the UUT, through mapping the topography of the UUT surface by scanning the probe over the surface of the UUT as shown in FIGURES. 10A-10D.

Claims 3, 5, 10-14, 19-22, 28, 29, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindsay et al. (US 5983712), as applied to claims 1, 23 and 30 above, in further view of Hellemans et al. (US 6091248).

Regarding Claims 3, 5, 10-14, 19-22, 28, 29, 31 and 32, Lindsay fails to disclose the identical structural and electrical measurement limitations of the claimed invention. However, as noted above Lindsay discloses obtaining images of the UUT through electric-al measurement. Furthermore, Hellemans discloses a method for measuring the electrical potential in a semiconductor element comprising an electrometer (10, FIG. 2, Hellemans) which measures the electrical potential through probe (3) of the

semiconductor device UUT (1). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have performed electrical measurements using an electrometer technique in the device of Lindsay for the reasons of obtaining images of the surface of a UUT.

Response to Arguments

Applicant's arguments filed June 11, 2001 have been fully considered but they are not persuasive.

Applicant's arguments with respect to claims 1-33 have been considered but are moot in view of the new ground(s) of rejection.

Claims 1, 2, 4, 6-9, 15-18, 23-27, 30 and 33 are rejected under 35 U.S.C. 103(a) over Lindsay et al. (US 5983712), in view of Applicant's admitted prior art.

Claims 3, 5, 10-14, 19-22, 28, 29, 31 and 32 are rejected under 35 U.S.C. 103(a) over Lindsay et al. (US 5983712), in view of Hellemans et al. (US 6091248), as set forth in the detailed Office Action, above.

With respect to claimed limitation of first positioning unit configured to be "optionally added" onto a probe station platform, the Applicant argues that Lindsay cites a fixed structure. Furthermore, the Applicant asserts that Lindsay fails to teach or suggest an optional positioning unit. The Examiner is directing the Applicant in the detailed Office Action at 35 U.S.C. 112, second paragraph rejection, that the phrase "optionally" implies a discretionary choice by the inventor to include or to exclude a positioning unit from the probe station. Lindsay discloses a first positioning unit actuator

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held in a fixed position. The fact that the unit is held in a fixed position relative to the probe platform, it does not exclude a person skilled in the art to remove such a unit using conventional removal means, if he so chooses. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have removed the positioning unit in the system of Lindsay for the reasons of exercising the option of adding or removing the unit from the probe station.

Any inquiry concerning this communication from the examiner should be directed to JAMES C. KERVEROS at the telephone number below or the examiner's supervisor, SAFET METJAHIC at (703) 308-1436. The general fax phone number for the organization is (703) 308-7722. Any inquiry of a general nature relating to this application should be directed to the receptionist at (703) 305-4900.

JCK/File
Date: June 29, 2001

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